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Indian Standard

GRAPHICAL SYMBOLS USED IN ELECTROTECHNOLOGY

PART XXV ELECTRICAL INSTALLATIONS IN SHIPS

UDC 621·316·174 : 629·12·066 : 003·62

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GRAPHICAL SYMBOLS USED IN ELECTROTECHNOLOGY
PART XXV ELECTRICAL INSTALLATIONS IN SHIPS

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(*Continued on page* 2)

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(*Continued on page* 38)

Indian Standard

GRAPHICAL SYMBOLS USED IN ELECTROTECHNOLOGY

PART XXV ELECTRICAL INSTALLATIONS IN SHIPS

0. FOREWORD

0.1 This Indian Standard (Part XXV) was adopted by the Indian Standards Institution on 29 December 1980, after the draft finalized by the Electrotechnical Standards Sectional Committee in consultation with the Electrical Equipment in Ships Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 It is common in electrical engineering practice to employ graphical symbols to denote the various means and devices used when making diagrams of connections. With the object of making these diagrams easy to understand and universal in meaning, it has become necessary to standardize the basic symbols for various devices commonly used in the field of electrical engineering.

0.3 In the preparation of this standard assistance has been derived from IEC Pub 92-2 (1965) ' Electrical installations in ships Part 2 : Graphical symbols ' issued by International Electrotechnical Commission.

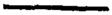
0.4 This standard (Part XXV) is one of the series of Indian Standards on graphical symbols used in electrotechnology. A list of Indian Standards so far published in this series is given on the fourth cover page.

1. SCOPE

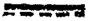
1.1 This standard (Part XXV) covers graphical symbols for electrical installations in ships.

2. TYPE OF CURRENT

2.1 Direct current



2.1.1 In such cases where symbol No. 2.1 is not suitable, symbol No. 2.1.1 should be used



2.2 Alternating current, general symbol	~
2.3 Symbol for apparatus and machines suitable either for direct current or alternating current (universal)	≂

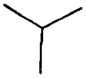
3. SYSTEMS OF DISTRIBUTION

3.1 Alternating current three-phase, 60 Hz	3~60
3.2 Neutral	N
3.3 Alternating current three-phase with neutral, 50 Hz	3N~50
3.4 Direct current, 3 conductors including neutral	2N—220V
3.5 Positive polarity	+
3.6 Negative polarity	−

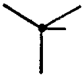
4. METHOD OF CONNECTING WINDINGS

4.1 One winding	|
4.2 Three separate windings	|||
4.3 Three-phase winding delta	△

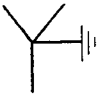
4.4 Three-phase winding star



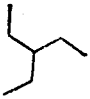
4.5 Three-phase winding star with neutral brought out



4.6 Three-phase winding star with neutral earth

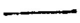


4.7 Three-phase winding zig-zag or interconnected star

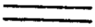


5. CONDUCTORS

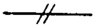
5.1 One conductor or a group of several conductors



5.2 Two conductors (multiline representation)

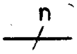


5.3 Two conductors (single-line representation)

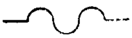


Note — The number of oblique strokes represents the number of conductors.

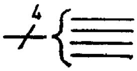
5.4 n conductors (single-line representation)



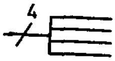
5.5 Flexible conductor



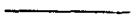
5.6 Changing over from single-line representation to multiline representation



5.6.1 Alternative symbol for changing over from single-line representation to multiline representation

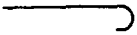


5.7 Line or cable, general symbol

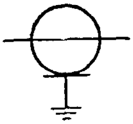


NOTE — Identification of the type of line or cable and the type of construction may be added to the symbol if necessary.

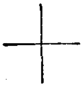
5.8 Conductor or cable end, not connected



5.9 Coaxial Cable with grounded shield



5.10 Crossing without electrical connection

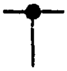


6. TERMINALS AND CONNECTIONS OF CONDUCTORS

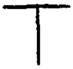
6.1 Terminal, connection of conductors

6.1.1 Alternate symbol for terminals and Connections of Conductors

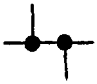
6.2 Junction of Conductors



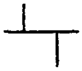
6.2.1 Alternate symbol for Junction of Conductors



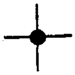
6.3 Double Junction of Conductors



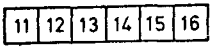
6.3.1 Alternate symbol for double junction of Conductors



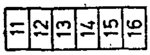
6.3.2 Alternate symbol of Double Junction of Conductors



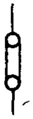
6.4 Terminal strip



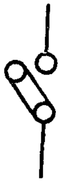
6.4.1 Alternate symbol for Terminal strip



6.5 Link, connected

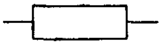


6.6 Link, disconnected

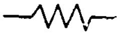


7. RESISTORS, WINDINGS, CAPACITORS

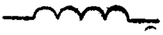
7.1 Resistor (if it is not necessary to specify whether it is reactive or not)



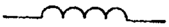
7.1.1 Alternate symbol for resistors



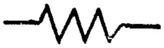
7.2 Inductor



7.3 Winding



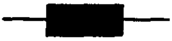
7.3.1 Alternate symbol for winding



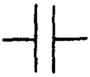
7.3.2 Alternate symbol for winding

NOTE 1 — Symbols **7.11** and **7.3.1** are not to be used with two meanings on the same diagram.

NOTE 2 — The number of half circles and the number of zig-zags can be chosen at will.

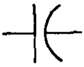


7.4 Capacitor

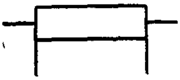


7.4.1 Alternate symbol for capacitor

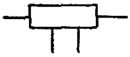
NOTE — The distance between the plates shall not be greater than one-fifth of the length of the plate.



7.5 Shunt

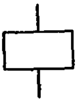


7.6 Resistor with fixed tappings (example : 2 tappings)

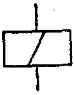


7.7 Relay Coil, general symbol

NOTE — This symbol is used when it is not necessary to specify the number of windings.

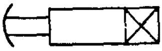


7.7.1 Relay coil with one winding

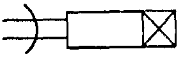


7.7.2 Magnetic Time delay relay:

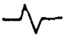
a) On-delay



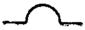
b) Off-delay



7.8 Contactor coil

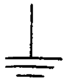


7.8.1 Alternative symbol for contactor coil



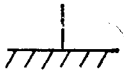
8. OTHER ELEMENTS OF ELECTRICAL CIRCUITS

8.1 Hull connection

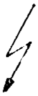


8.2 Frame or chassis connection

NOTE — The hatching may be completely or partly omitted if there is no ambiguity. If the hatching is omitted, the line representing the frame or chassis shall be thicker.

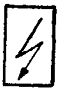


8.3 Fault

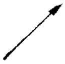


8.3.1 Alternate symbol for fault

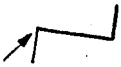
NOTE — The same symbol for fault is used on a plate or piece of apparatus to indicate a "Dangerous voltage".



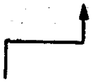
8.4 Variability, general symbol



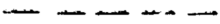
8.5 Variation by steps



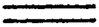
8.5.1 Alternate symbol for variation by steps



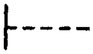
8.6 Mechanical coupling, general symbol



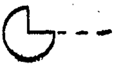
8.7 Mechanical coupling, where space is too restricted to permit the use of symbol No. **8.6**



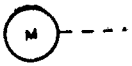
8.8 Manually operated control, general symbol



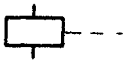
8.9 Cam operated control



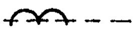
8.10 Control operated by electric motor



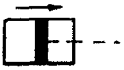
8.10.1 Electromagnetic drive



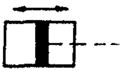
8.10.2 Alternate symbol for electromagnetic drive



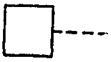
8.11 Single acting pneumatic or hydraulic control



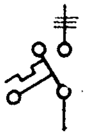
8.12 Double acting pneumatic or hydraulic control



8.13 Control operated by stored mechanical energy

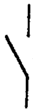


8.14 Contactor with overload protection and shunt trip

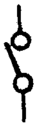


9. SWITCHGEAR, ACCESSORIES

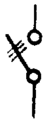
9.1 Switch, general symbol



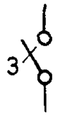
9.1.1 Alternate symbol for switch



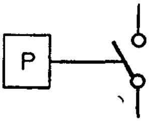
9.2 Three-pole switch, single-line representation



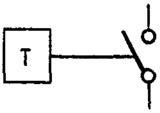
9.2.1 Alternate symbol for three-pole switch, single-line representation



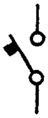
9.3 Pressure switch



9.4 Thermostat

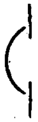


9.5 Circuit-breaker

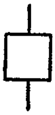


9.5.1 Alternate symbol of Circuit-breaker

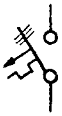
NOTE — The rectangle of symbol 9.5 should contain some indication, that a circuit breaker is concerned.



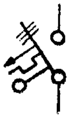
9.5.2 Alternate symbol for circuit-breaker



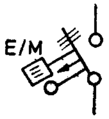
9.5.3 Circuit breaker with short circuit under voltages and thermal Overload releases



9.5.4 Hand-operated circuit breaker with short-circuit, thermal overload protection and no-volt tripping

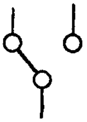


9.5.5 Motor-solenoid operated air circuit breaker with short-circuit and no-volt tripping (triple pole)

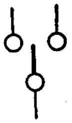


9.6 Change-over contact, break before make

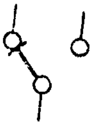
Note — The fixed contacts may be placed at any angle except at 60°. In order to facilitate the work of the draughtsman, the contacts may be arranged differently.



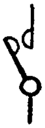
9.7 Two-way contact with neutral position



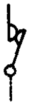
9.8 Make-before-break contact



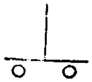
9.9 Contactor, normally open



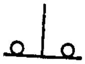
9.9.1 Contactor, normally closed



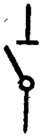
9.10 Push button with normally open contact



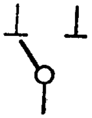
9.10.1 Push button with normally closed contact



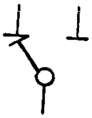
9.11 Isolator



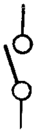
9.12 Two-way isolator with interruption of circuit



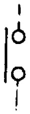
9.13 Two-way isolator without interruption of circuit



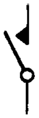
9.14 Make contact, general symbol



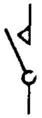
9.14.1 Alternate symbol for make contact, general symbol



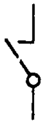
9.14.2 Alternate symbol for make contact



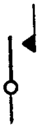
9.14.3 Alternate symbol for make contact



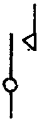
9.14.4 Alternate symbol for make-contact



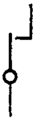
9.14.5 Alternate symbol for make-contact



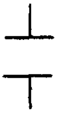
9.14.6 Alternate symbol for make-contact



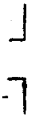
9.14.7 Alternate symbol for make-contact



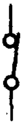
9.14.8 Alternate symbol for make-contact



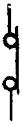
9.14.9 Alternate symbol for make-contact



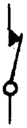
9.15 Break contact, general symbol



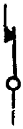
9.15.1 Alternate symbol for break-contact



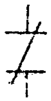
9.15.2 Alternate symbol for break-contact



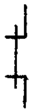
9.15.3 Alternate symbol for break-contact



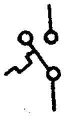
9.15.4 Alternate symbol for break-contact



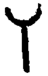
9.15.5 Alternate symbol for break-contact



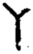
9.16 Thermal overload contact



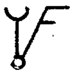
9.17 Socket (female)



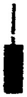
9.17.1 Alternate symbol for socket (female)



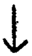
9.17.2 Socket with switch



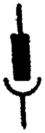
9.18 Plug (male)



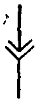
9.18.1 Alternate symbol for plug (male)



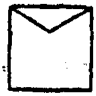
9.19 Plug and Socket (male and female)



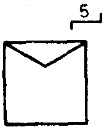
9.19.1 Alternate symbol for plug and Socket (male and female)



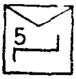
9.20 Starter, general symbol



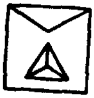
9.21 Starter by steps (Examples : 5 steps)



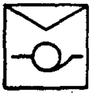
9.21.1 Alternate symbol for starter by steps (Example : 5 steps)



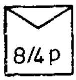
9.22 Star-delta starter



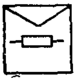
9.23 Autotransformer starter



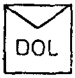
9.24 Pole changing starter (Example, 8/4 poles)



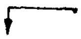
9.25 Rheostatic starter



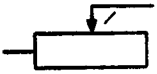
9.26 Direct on-line starter



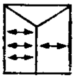
9.27 Sliding contact, general symbol



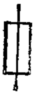
9.27.1 Resistor with moving contact, general symbol



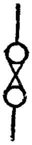
9.28 Combined control panel for two motors (multiple speed and reversible)



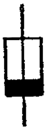
9.29 Fuse



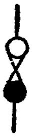
9.29.1 Alternate symbol for fuse



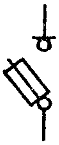
9.29.2 Alternate symbol for fuse where supply side is indicated by a thick line



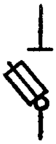
9.29.3 Alternate symbol for fuse where supply side is indicated by a thick line



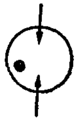
9.30 Isolating fuse-switch, switching on load



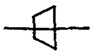
9.31 Isolating fuse-switch



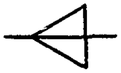
9.32 Protective gas discharge tube



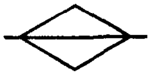
9.33 Cable sealing end (pothead)



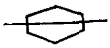
9.33.1 Alternate symbol for cable sealing end (pothead)



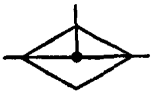
9.34 Straight through joint box



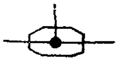
9.34.1 Alternate symbol for straight through joint box



9.35 Junction box for three cables

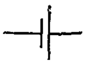


9.35.1 Alternate symbol for junction box for three cables

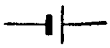


10. PRIMARY CELLS, ACCUMULATORS

10.1 Primary cell or accumulator

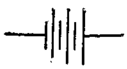


10.1.1 Alternate symbol for primary cell or accumulator

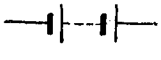


NOTE — The long line represents the positive pole, and the short line the negative pole.

10.2 Battery of accumulators or primary cells

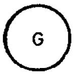


10.2.1 Alternate symbol for battery of accumulators or primary cells

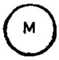


11. ELECTRICAL MACHINES

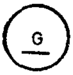
11.1 Generator



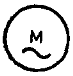
11.2 Motor



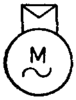
11.3 Direct current generator



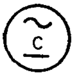
11.4 AC motor



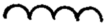
11.4.1 AC motor with starter mounted on it



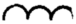
11.5 Synchronous converter



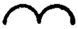
11.6 Shunt winding or separate winding



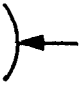
11.7 Series winding



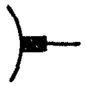
11.8 Commutating or compensating winding



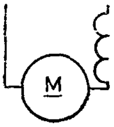
11.9 Brush on slip-ring



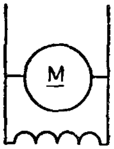
11.10 Brush on commutator



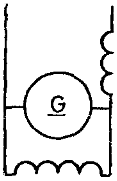
11.11 DC 2-wire series motor



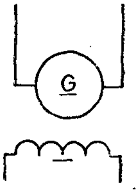
11.12 DC 2-wire shunt motor



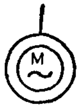
11.13 DC 2-wire generator, compound excited, short shunt



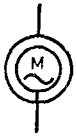
11.14 DC 2-wire generator, separately excited



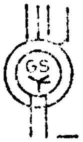
11.15 Induction motor, with short-circuited rotor



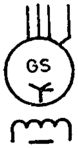
11.16 Induction motor, with wound rotor



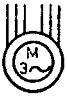
11.17 Synchronous generator, three-phase star-connected, neutral brought out



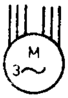
11.17.1 Alternate symbol for synchronous generator, three-phase star-connected, neutral brought out



11.18 Induction motor, three-phase squirrel-cage, both leads of each phase brought out

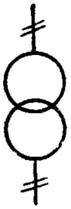


11.18.1 Alternate symbol for Induction motor, three-phase squirrel-cage, both leads of each phase brought out

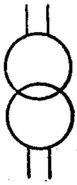


12. TRANSFORMERS

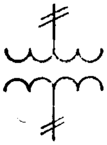
12.1 Single-phase transformer with two separate windings



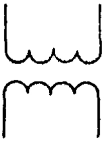
12.1.1 Alternate symbol for single-phase transformer with two separate windings



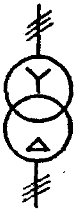
12.1.2 Alternate symbol for single-phase transformer with two separate windings



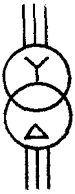
12.1.3 Alternate symbol for single-phase transformer with two separate windings



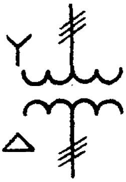
12.2 Three-phase transformer with two separate windings (for example, star-delta)



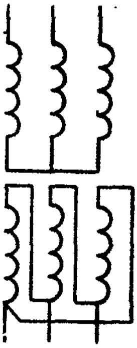
12.2.1 Alternate symbol for three-phase transformer with two separate windings (for example, star-delta)



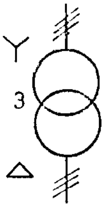
12.2.2 Alternate symbol for three-phase transformer with two separate windings (for examble, star-delta)



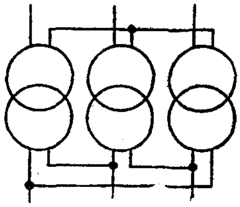
12.2.3 Alternate symbol for three-phase transformer with two separate windings (for example, star-delta)



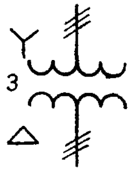
12.3 Three-phase bank of single-phase transformers with two separate windings (for example, star-delta)



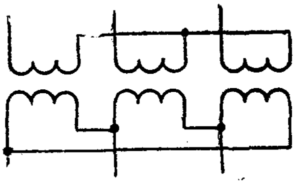
12.3.1 Alternate symbol for three-phase bank of single-phase transformers with two separate windings (for example, star-delta)



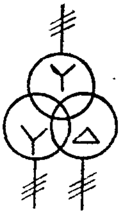
12.3.2 Alternate symbol for three-phase bank of single-phase transformers with two separate windings (for example, star-delta)



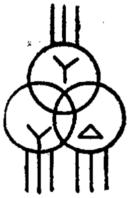
12.3.3 Alternate symbol for three-phase bank of single-phase transformers with two separate windings (for example, star-delta)



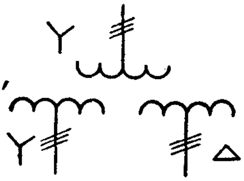
12.4 Three-phase transformer with three-separate windings, Connection (for example, star-star-delta)



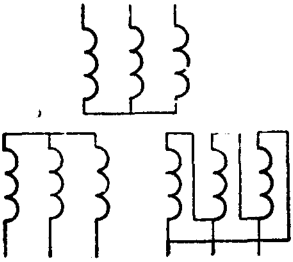
12.4.1 Alternate symbol for three-phase transformer with three-separate windings, Connection (for example, star-star-delta)



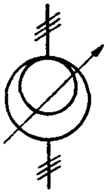
12.4.2 Alternate symbol for three-phase transformer with three separate windings, Connection (for example, star-star-delta)



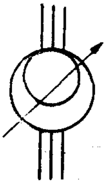
12.4.3 Alternate symbol for three-phase transformer with three separate windings, Connection (for example, star-star-delta)



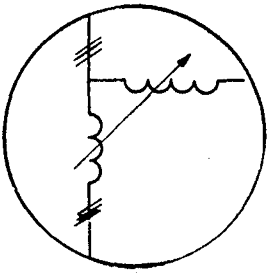
12.5 Three-phase induction regulator



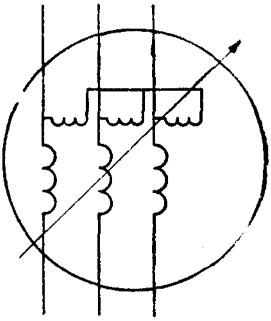
12.5.1 Alternate symbol for three-phase induction regulator



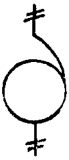
12.5.2 Alternate symbol for three-phase induction regulator



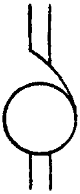
12.5.3 Alternate symbol for three-phase induction regulator



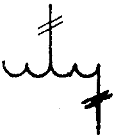
12.6 Auto-transformer, single-phase



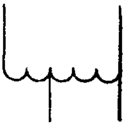
12.6.1 Alternate symbol for auto-transformer, single-phase



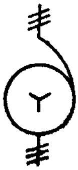
12.6.2 Alternate symbol for auto-transformer, single-phase



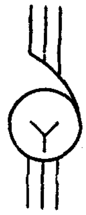
12.6.3 Alternate symbol for auto-transformer, single-phase



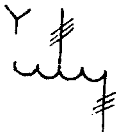
12.7 Auto-transformer, three-phase Connection: Star



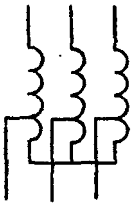
12.7.1 Alternate symbol for auto-transformer, three-phase connection : star



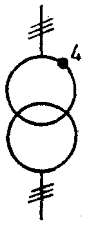
12.7.2 Alternate symbol for auto-transformer, three-phase Connection : Star



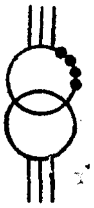
12.7.3 Alternate symbol for auto-transformer, three-phase Connection : Star



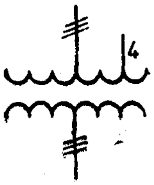
12.8 Three-phase transformer with 4 tappings



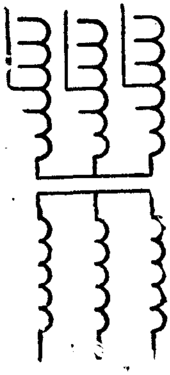
12.8.1 Alternate symbol for three-phase transformer with 4 tappings



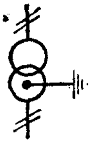
12.8.2 Alternate symbol for three-phase transformer with 4 tappings



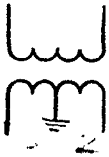
12.8.3 Alternate symbol for three-phase transformer with 4 tappings



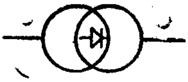
12.9 Single-phase transformer with the centre-point of one winding earth



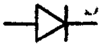
12.9.1 Alternate symbol for single-phase transformer with the centre-point of one winding earthed



12.10 Combined transformer rectifier unit

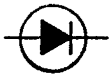


12.11 Element with asymmetrical conductivity



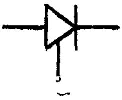
NOTE — The highest conductivity is obtained when the triangle is positive with respect to the bar.

12.12 Semiconductor diode or rectifier, general symbol

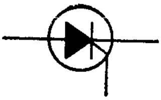


NOTE — The circle may be omitted if there is no risk of confusion.

12.13 Silicon-controlled rectifier

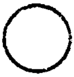


12.13.1 Alternate symbol for silicon-controlled rectifier

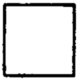


13. MEASURING INSTRUMENTS

13.1 Indicating instrument or measuring instrument, general symbol

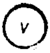


13.2 Recording instrument, general symbol

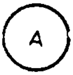


Note — The symbols **13.3** to **13.12** represent measuring or indicating instruments. The symbol No. **13.2** of recording instruments can be completed by one of the letters V, A, etc for name indications.

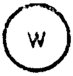
13.3 Voltmeter



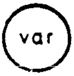
13.4 Ammeter



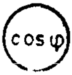
13.5 Wattmeter



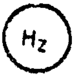
13.6 Varmeter



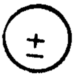
13.7 Power-factor meter



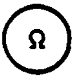
13.8 Frequency meter



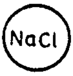
13.9 Current direction indicator



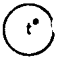
13.10 Ohmmeter



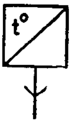
13.11 Salinity meter



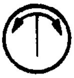
13.12 Pyrometer, thermometer



13.13 Telemetering transmitter for temperature

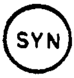


13.14 Synchronoscope

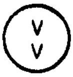


PREFERRED

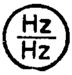
13.14.1 Alternate symbol for synchronoscope



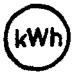
13.15 Double voltmeter



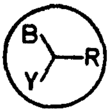
13.16 Double frequency meter



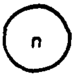
13.17 Energy meter



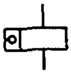
13.18 Phase sequence indicator



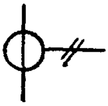
13.19 Tachometer



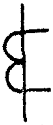
13.20 Pulse meter (pulse counter calibrated in electrical or other unit)



13.21 Current transformer

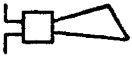


13.21.1 Alternate symbol for current transformer

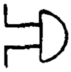


14. TELEPHONY, ALARM SYSTEMS

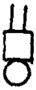
14.1 Klaxon



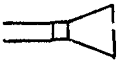
14.2 Bell



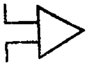
14.2.1 Alternate symbol for bell



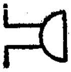
14.2.2 Loudspeaker



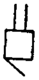
14.3 Siren



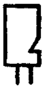
14.4 Buzzer



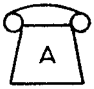
14.4.1 Alternate symbol for buzzer



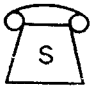
14.5 Whistle, electrically operated



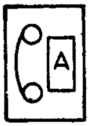
14.6 Auto-telephone desk type



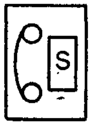
14.7 Sound-powered telephone desk type



14.8 Auto-telephone bulkhead type

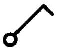


14.9 Sound powered telephone bulkhead mounting type

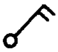


15. INSTALLATION SYMBOLS FOR ARCHITECTURAL DIAGRAMS

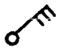
15.1 Single-pole, one-way switch



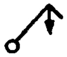
15.2 Two-pole, one-way switch



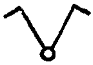
15.3 Three-pole, one-way switch



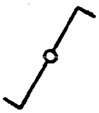
15.4 Single-pole, pull switch



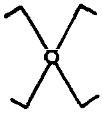
15.5 Multiposition switch for different degrees of lighting



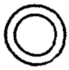
15.6 Two-way switch



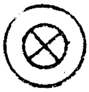
15.7 Intermediate switch



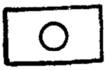
15.8 Push-button



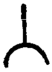
15.8.1 Illuminated Push-Button



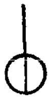
15.9 Restricted access push-button (example : by a glass)



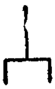
15.10 Socket outlet



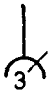
15.10.1 Alternate symbol for socket outlet



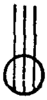
15.11 Socket outlet for telecommunications, general symbol



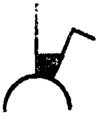
15.12 Multiple socket outlet (for example : with three outlets)



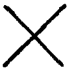
15.12.1 Alternate symbol for multiple-socket outlet



15.13 Socket outlet with interlocking switch

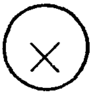


15.14 Lamp, outlet for lamp(s), general symbol

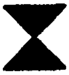


15.15 Special lamp fitting, general symbol

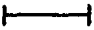
Note — In this example the cross defines the lamp type, it may be replaced by an appropriate designation if there is no risk of confusion.



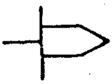
15.16 Emergency lamp



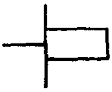
15.17 Fluorescent lamp, general symbol



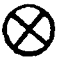
15.18 Direction indicator



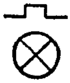
15.19 Place indicator



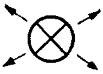
15.20 Signal lamp



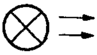
15.20.1 Flashing signal lamp



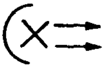
15.21 Signalling device, shining in the horizontal plane



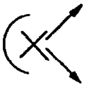
15.22 Signalling lamp, shining in one direction only



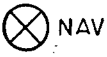
15.23 Spot light



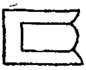
15.24 Flood light



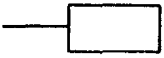
15.25 Navigation lamp



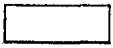
15.25.1 Alternate symbol for navigation lamp



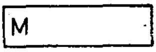
15.26 Electrical appliances, general symbol



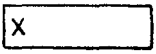
15.27 Distribution board, cubicle, box



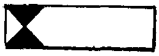
15.28 Distribution box, cubicle or board for power (for example : for motors)



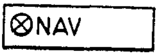
15.29 Distribution box, cubicle or board for lighting



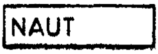
15.30 Distribution box, cubicle or board for emergency lighting



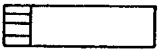
15.31 Distribution box, cubicle or board for navigation lights



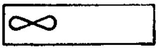
15.32 Distribution box, cubicle or board for nautical instruments



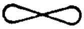
15.33 Distribution box, cubicle or board for electric heating



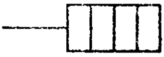
15.34 Distribution box, cubicle or board for ventilation



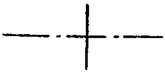
15.35 Electric fan



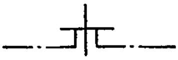
15.36 Heater, general symbol



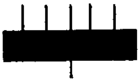
15.37 Wiring passing through



15.38 Bushing gland

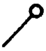


15.39 Distribution centre (for example for one incoming and five outgoing circuits)

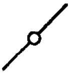


15.40 Wiring going upwards

15.41 Wiring going downwards

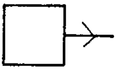


15.42 Wiring passing vertically through a room

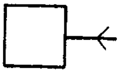


16. TELECOMMUNICATIONS

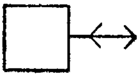
16.1 Transmitter



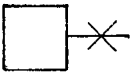
16.2 Receiver



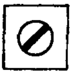
16.3 Apparatus working alternatively as a transmitter or receiver, simplex



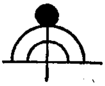
16.4 Apparatus working alternatively as a transmitter or receiver, duplex



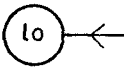
16.5 Engine telegraph



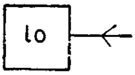
16.5.1 Alternate symbol for engine telegraph



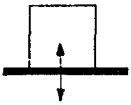
16.6 Log receiver, indicating



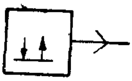
16.7 Log receiver, recording



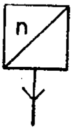
16.8 Echo sounder



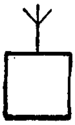
16.9 Recording echo sounder



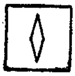
16.10 Tachometer transmitter



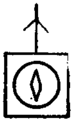
16.11 Radio station, general symbol



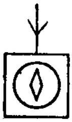
16.12 Magnetic compass



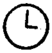
16.13 Gyro compass, transmitter



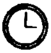
16.14 Gyro compass, receiver



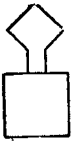
16.15 Clock, general symbol (and slave clock)



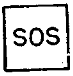
16.16 Master clock



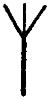
16.17 Direction finder



16.18 SOS auto-alarm



16.19 Antenna (general)



(*Continued from page 2*)

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2032	Graphical symbols used in electrotechnology
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(Part V)-1965	Generating stations and sub-stations
(Part VI)-1965	Motor starters
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(Part X)-1969	Measuring instruments
(Part XI)-1969	Electrical installation in buildings
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(Part XVIII)-1976	Symbols and connection diagrams for integrating meters
(Part XIX)-1977	Electrical equipment used in medical practice
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